Relocation. Since relocation of vulnerable structures removes the threat of loss, it is now an allowable expense under the National Flood Insurance Program (NFIP) and can be assisted locally through technical assistance programs.

Safety Codes. In addition to the Building Officials & Code Administrators (BOCA) National Building Code, other safety codes are available for consideration and possible adoption.

Staffing and Training of Response Personnel. A local response training program should take advantage of programs and courses available through FEMA or the state, each of which has a training officer responsible for coordinating the delivery of federally-funded emergency management programs.

Subdivision Regulations. Subdivision regulations govern both the conversion of undeveloped land to building sites and the provision of improvements such as streets and utilities. Relative to hazard mitigation, local subdivision regulations can also require the flood proofing of infrastructure, the dedication of hazard areas for open space, the clustering of buildings on least hazardous sites and the disclosure of risks to prospective property owners.

Tax Incentives. Tax policy can provide incentives to undertake mitigation actions. For example, the county can establish "preferential" or "use value" taxes for properties located in the flood-prone areas if the property owner agrees to maintain a low-density use of the land. In this way, property is taxed on the basis of its actual income production rather than its market value.

Transfer of Development Rights. A Transfer of Development Rights (TDR) program is intended to use properties located within a high hazard area for recreational or open space purposes by compensating the property owners for the loss of their right to develop it in more intense land uses. A typical TDR program establishes both a preservation district and a development district. Landowners in the preservation or "sending" district may sell their development rights to landowners in the development or "receiving" district who may then use these rights to build at higher densities than allowed under current zoning standards.

Watershed Management. A watershed is defined as the total area drained by a given stream or river. The plan for management of a watershed should include a complete watershed analysis. Such an analysis provides statistical, schematic and graphic information that can be used to calculate potential runoff, to simulate flooding conditions, to analyze proposed site plans and to storm drain layout.

Zoning Ordinances. Zoning ordinances regulate the use of land and structures; standards for setbacks, yards, building height, lot size and density; and establish the method for dealing with nonconforming uses and structures. Zoning can be used to limit development in hazard-prone areas to establish performance standards that reduce vulnerability and to create incentives for development that incorporate hazard mitigation.

Appendix 11 – Model Debris Management Plan

MONROE COUNTY

DEBRIS MANAGEMENT PLAN

July 2002

MISSION

To facilitate and coordinate the removal, collection, and disposal of debris following a minor/major disaster to mitigate any potential threat to the health, safety, and welfare of the impacted citizens, expedite recovery efforts in the impacted area, and address any threat of significant damage to public or private property.

OUTLINE OF VARIOUS TASKS OF DEBRIS MANAGEMENT CYCLE

A. Normal Operations -

Definition; Routine actions necessary to develop or update a debris management plan.

1. Development of sample contracts.
2. Development of right-of-entry and hold harmless agreements.
3. Development of specific sites for debris collection, reduction and disposal.
4. Development of specifications for site work.

B. Increased Readiness -

Definition; Actions necessary if a potential disaster is threatening the local area.

1. Review and update the plan.
2. Altering local departments regarding responsibilities.
3. Relocating personnel and resources.

C. Response -

Definition; Activation of staff and implementation of debris removal plans.

1. Activation of plan.
2. Coordinating and tracking of resources.
3. Establishing debris removal priorities.

D. Recovery -

Definition; Implementation of debris collection, monitoring of removal activities, and update of plan.

1. Collection, Storage, Reduction, and Disposal of debris.
2. Close-out of various sites.
3. Environmental Considerations

DEBRIS MANAGEMENT STAFF RESPONSIBILITIES

A. General Responsibilities:

1. Review and update of plan.
2. Development of standard operating procedures.
3. Development of standardized contracts.
4. Development of standard forms regarding debris removal, storage, reduction, and disposal processes.
5. Alert local departments with debris removal responsibilities.
6. Ensure that personnel, facilities, and equipment are functional for intended use in emergency.
7. Relocation of personnel and equipment to areas where they can be effectively mobilized for use.
8. Identification of potential debris disposal sites.
9. Review listing of private contractors who may assist in debris removal process.
10. Develop pre-scripted announcements to the news media for release regarding debris removal process, collection schedules, and location of various sites.

B. Specific Responsibilities:

1. Coordination of all debris removal and disposal activities.
2. Cooperation with all Local, State, and Federal agencies responsible for disaster response and recovery operations.
3. Develop requests for additional assistance from FEMA (Federal Emergency Management Area)
4. Assessment of debris characteristics, such as quantity and type, general locations, types and number of various facilities damaged or destroyed, miles of roads and type affected by disaster.

DEBRIS MANAGEMENT STAFF COMPOSITION AND FUNCTIONS

The staff should be comprised of personnel from Solid Waste, Roads, and Engineering to coordinate or contract for or perform the following:

FUNCTIONS:

1. Administration - Supplies, equipment, funding, and accounting.
2. Communication /Liaison - Provide the Emergency Operations Center (EOC) with a coordinator to act as a liaison for information between the organizations. EOC will keep the coordinators informed of all events, requests for traffic control, and any emergency response, or priority debris removal requests.
3. Contracting and Procurement - Bidding requirements, forms, advertisement for bids, instruction to bidders, and contract development.
4. Legal - Contract review, right-of-entry permits, community liability, land acquisition of sites for collection and disposals, and insurance.
5. Operations - Supervision of government and contract resources and overall project management.
6. Engineering - Identification of project tasks, assignment of tasks, preparation of estimates, plans, and specifications; and recommendation of award.

7. Damage Assessment - Duties, assessment, responsibilities and detailed reporting of all damages in the area.

   1) Perform debris management in public, not private areas or as authorized in writing by FEMA. Operate and maintain by public bid contract the transfer station, any burn/grinding sites, debris removal in Monroe County road rights-of-way, public road rights of way, convenience centers, pump stations, water towers, and all county property and easements. Solid Waste personnel will do the damage assessments, reports, and project worksheet submittals to FEMA for all functions under its jurisdiction for reimbursement.

   2) Supervisors will maintain and record daily a log of all activities, locations, time, date, employees and hours worked, weather, contractors, equipment, and activity in progress from the start of the debris management emergency until completion. During the initial beginning of the debris management emergency employees will not be granted any extended leave unless there is a family emergency.

8. Public Information - Coordinate press releases, media interviews, transfer station and any storage site visits, contacts with local organizations, individuals and media, and public notices for debris removal and disposal contracts.

MONROE COUNTY PUBLIC WORKS AUTHORITY RESPONSIBILITIES AND ACTION

A. Monroe County Roads

1. Prior to disaster -
   - Prior to foreseeable disaster, implement the debris management plan.
   - Vehicles and equipment will be inspected and made ready. Vehicles and heavy equipment
     will be dispersed throughout the area as appropriate.
   - Anticipated supplies and equipment needs should be addressed by purchasing or renting needed items.

2. After the disaster -
   - Assist with clearing major arterial roads with priority given to roads as defined in sub-appendix A.
   - Assign volunteer participants responsibility for certain roadways.
   - Coordinate with FDOT.

B. Monroe County Solid Waste

1. Prior to disaster -
   - Prior to foreseeable disaster, implement the debris management plan.
   - Vehicles and equipment will be ready and dispersed throughout the area as appropriate.
   - Anticipated supply and equipment needs should be addressed by purchasing or renting those items covered in the Hurricane Preparedness Plan. Examples; boots, raingear, sand, sandbags, stock piles of dirt and rock, gas and fuel.
   - Have contracts prepared to initiate task orders to clear all roadways. Have a plan for clearing arterial roads.

2. After the disaster -

- Initiate task orders to Contractors that have been awarded debris contracts.
- Responsible for normal garbage pickup and debris disposal actions.
- Monitor debris removal and disposal contracts to ensure that public funds are properly accounted for and that contractors perform according to contract requirements in the unincorporated areas of Monroe County..
- Provide oversight for the ultimate disposal of all debris from the disaster.

DISPOSAL SITE SELECTIONS AND OPERATION

Debris Management staff may identify temporary sites within Monroe County for debris storage, and reduction. These sites will be contracted for and operated by private contractor.

At any sites contracted by the county, the contractor will be required to provide for disposal of multiple types of debris which are included as sub-appendix "B" to this report. The contractor will also be required to provide for collection of the other materials in sub-appendix "B" at each respective site. Upon completion of the disaster recovery phase, the contractor will be required to close out the site in accordance with Local, State, and Federal regulations.

At the grinding sites contracted by the county, the contractor will be required prior to operation and at the conclusion of the contract and/or site to provide the county, certified by an independent source (Professional Engineering Firm), the following:

> Baseline data documenting condition of the land before it is used as a grinding site includes, but is not limited to, video tape (dated/timed); photographs (ground or aerial); periodically updated video and photographs; location and conditions of existing structures, fences, culverts, etc; random air soil and groundwater samples prior during and at close of site; and operational plan for each site including equipment to be used, personnel and supervisor, traffic control signs, waste disposal, observation tower at entrance, procedure to handle household hazardous waste, hazardous waste/hazardous material, and fuel storage, safety and fire protection plan, and site plan. See sub-appendix "C".

The items that are classified under Ineligible Debris in sub-appendix "B" will be collected under separate contract and disposed of at an approved site designated by the Monroe County Solid Waste Director. Upon completion of the recovery phase, the separate site contractors will also be required to dispose of all excess materials from their individual sites. No debris will be buried on the property of any grinding site.

Sub-Appendix A

DEBRIS REMOVAL PRIORITIES

A. The following policies will govern emergency debris clearance, removal and disposal priorities:

1. Emergency access to aid search and rescue operations.
2. Major arterial roadways linking Monroe County to inter-county traffic.
3. Major arterial roadways providing access to designated response/recovery centers, public/private utility companies providing water service, and entry roads to any County designated solid waste temporary debris storage/reduction sites.
4. Major arterial roadways providing access to roadways carrying inter-county traffic.
5. Roadways providing access to designated staging areas and distribution centers supporting disaster relief efforts.
6. Roadways providing access to major commercial activity centers.
7. Minor arterial roadways coming under County maintenance responsibility.
8. Collector roadways under County maintenance responsibility, and other roadways under county maintenance responsibility.

B. Once road clearing operations supporting search and rescue operations, clearing inter-county roadways, and providing access to designated response/recovery centers are completed, debris clearance will be guided by the following priority sequence:

1. Area medical facilities with emergency rooms, areas designated for field medical sites, areas designated for staging and distributing disaster relief aid.
2. Facilities designated as centers for emergency response operations, fire district and law enforcement stations.
3. Areas with minor damage.
4. Areas with major damage.
5. Areas with catastrophic damage.

Sub-appendix B

DEBRIS CLASSIFICATIONS *

Definition of classifications of debris are as follows:

GRINDABLE MATERIALS: Grindable materials will be of two types with separate grinding locations:

- **Grindable Debris:** Grindable debris includes, but is not limited to, damaged and disturbed trees; bushes and shrubs; broken, partially broken and severed tree limbs; and bushes. Grindable debris consists predominately of trees and vegetation. Grindable debris does not include garbage or construction and demolition material debris.

- **Grindable Construction Debris:** Grindable construction and demolition debris consists of noncreosote structural timber, wood products, and other materials designated by the coordinating agency representative.

NON-BURNABLE/GRINDABLE DEBRIS: Non-burnable construction and demolition debris includes, but is not limited to, creosote timber, plastic, glass, rubber and metal products, sheet rock, roofing shingles, carpet, tires, and other materials as may be designated by the coordinating agency.

STUMPS: Stumps will be considered tree remnants exceeding 24 inches in diameter; but no taller than 18 inches above grade, to include the stump ball. Any questionable stumps shall be referred to the designated coordinating agency representative for determination of its disposition with respect to grinding or disposal.

INELIGIBLE DEBRIS: Ineligible debris to remain in place includes, but is not limited to, garbage, chemicals, petroleum products, paint products, asbestos, power transformers, cars, trucks, trailers, boats, and known hazardous waste. These items shall be referred to the designated coordinating agency representative for determination of its dispositions.

Any material that is found to be classified as hazardous or toxic waste (HTW) shall be reported immediately to the Director of Solid Waste and the responsible Environmental Coordinator. At the coordinating agency representative's direction, this material shall be segregated from the remaining debris in such a way as to allow the remaining debris to be loaded and transported. Standing broken utility poles, damaged and downed utility poles and appurtenances, transformers and other electrical material will be reported to the coordinating agency representative. Emergency workers shall exercise due caution with existing overhead and underground utilities and above ground appurtenances, and advise the appropriate authorities of any situation that poses a health or safety risk to workers on site or to the general population.

* Debris classifications developed and used by the Corps of Engineers in Hurricane Andrew

** Animal Carcass
Must be disposed of immediately.

Sub-appendix C

OPERATING TEMPORARY DEBRIS STORAGE GRINDING SITES

1 - **Recovery**

The following actions normally occur during the Recovery Phase of the Debris Management Cycle:

A. Continue to collect, store, reduce, and dispose of debris generated from the event in a cost effective and environmentally responsible manner.
B. Continue to document costs.
C. Develop and implement site close-out.
D. Monitor environmental issues.

2 - **Temporary Debris Storage/ Grinding Site Preparation**

A. The topography and soil/substrate conditions should be evaluated to determine best site layout.
B. When planning site preparation, think of ways to make restoration easier.

3 - **Site Operators**

A. Temporary storage/grinding areas for the following should have impervious liners to prevent contamination to soils and groundwater:

* ASH
* HOUSEHOLD HAZARDOUS WASTE
* FUELS
* GENERATORS
* MOBILE LIGHTING PLANTS
* HAZARDOUS WASTE/HAZARDOUS MATERIAL

B. Monitor equipment storage, refueling, and repair sites to prevent and mitigate spills of petroleum products and hydraulic fluids.
C. Contracts should include clauses that require immediate cleanup by the contractor.
D. Be aware of and mitigate procedures that may irritate occupants of neighboring areas.
E. Establish a buffer zone to abate:

* SMOKE
* DUST
* NOISE
* TRAFFIC

F. Consider on-site traffic patterns and segregate materials based on planned volume reduction methods.
G. Substrate compaction and over excavation of soils when loading debris will adversely affect landscape restoration.
H. Debris removal/disposal should be viewed as a multi-staged operation with continuous volume reduction.
I. There should be no significant accumulation of debris at storage sites.
J. Debris should be constantly flowing to grinders, or recycled with the residue and mixed construction and demolition materials going to a landfill.

4 - **Baseline Data Collection**

Baseline data are essential to document the condition of the land before it is used as a debris storage/grinding site.

A. Thoroughly video tape and/or photograph (ground or aerial) each site before any activities begin.
B. Periodically update video and photographic documentation to track site evolution.
C. Note the location and condition of existing structures, fences, culverts, and irrigation systems.
D. Take random soil and groundwater samples prior to volume reduction activities.
E. Conduct continuous groundwater sampling after operations commence.
F. Sample designated household hazardous wastes, ash, and fuels storage areas prior to site setup.
G. Contact County and State environmental agencies to establish:

* REGULATORY REQUIREMENTS
* CHAIN OF CUSTODY REQUIREMENTS
* ACCEPTABLE COLLECTION METHODS
* CERTIFIED LABORATORIES
* TEST PARAMETERS

H. Establish contracts with an environmental consulting firm for monitoring and testing.

5 - **Site Operation Layout**

A. Periodically map/sketch activity locations so that areas of concern can be pinpointed later or additional sampling.
B. Document contractor operations that will have a bearing on site close-out, such as:

* PETROLEUM SPILLS AT FUELING SITES
* HYDRAULIC FLUID SPILLS AT EQUIPMENT BREAKDOWNS
* CONTRACTOR INSTALLATION OF WATER WELLS FOR PILE COOLING OR DUST CONTROL
* DISCOVERY OF HOUSEHOLD HAZARDOUS WASTE IN DEBRIS
* DETAILS ON HOUSEHOLD HAZARDOUS WASTE STORAGE AND DISPOSAL
* DETAILS ON HAZARDOUS WASTE/HAZARDOUS MATERIAL STORAGE AND DISPOSAL

C. Plan the landscape restoration as early as possible, preferably incorporating a basic plan in the lease.
D. Come to an agreement with the landowner prior to occupancy to establish reasonable expectations of site conditions upon site close-out.
E. Final restoration of the landscape must be acceptable to the landowner.

6 - **Baseline Data Checklist**

A. Before site is used:

* Take ground or aerial video/photographs.
* Note important features, such as structures, fences, culverts, and landscaping.
* Take random soil samples.
* Take water samples from existing wells.
* Check the site for volatile organic compounds.

B. During site use:

* Kept clean of all litter, maintenance activities, at all times.
* Establish groundwater monitoring wells.
* Take groundwater samples.
* Take spot soil samples at household HTW, ash, and fuel storage areas.
* Update videos/photographs.
* Update maps/sketches of site layout.
* Update QA reports, fuel spills, etc.
* All fuel, petroleum, etc. must be in protective burms lined and kept away from operation storm water run off area's and safe.

C. After site is used:

* All ground material removed and site cleaned.
* All equipment removed.
* Pits restored to original condition.
* Site graded and hydro seeded with proper seed/fertilizer (for the season) to establish a crop of grass within 30 days.

7 - **Household Hazardous Waste & Hazardous Material/Hazardous Waste**

A. Household hazardous waste/Hazardous Material/Hazardous Waste may consist of:

COMMON HOUSEHOLD CHEMICALS
PROPANE TANKS
OXYGEN BOTTLES
BATTERIES
INDUSTRIAL, COMMERCIAL, MEDICAL AND AGRICULTURAL CHEMICALS/WASTE

These items will be mixed into the debris stream and will require close attention throughout the debris removal and disposal process.

B. Establish separate storage areas for:

HOUSEHOLD HAZARDOUS WASTE AND HAZARDOUS MATERIALS/HAZARDOUS WASTE
CONTAMINATED SOILS
CONTAMINATED DEBRIS
MEDICAL WASTE

C. Hazardous storage areas should be lined with an impermeable material and bermed to prevent contamination of the groundwater and surrounding area.
D. Promptly remove hazardous materials from temporary storage areas by qualified Hazardous waste contractors in accordance with local, State, and Federal regulations.

8 - **Environmental Monitoring and Testing**

A. Debris will normally enter a temporary storage site faster than it can be reduced and ultimately disposed of.
B. Organic matter in debris piles will begin to decompose and may create toxic or volatile Vapors.
C. Grinding operations may also produce pollutants that impact the air quality of the area.
D. Air quality must be monitored to ensure that local, State, and Federal environmental regulations are complied with.
E. Air quality monitoring should be instituted at all debris storage and reduction sites to check for volatile organic vapors of a petrochemical origin and airborne pollutants caused by grinding operations.
F. Take actions to keep pollutants at or below acceptable local, State, and Federal Environmental Protection Agency environmental standards.
G. Testing procedures should include readings for:

OZONE
CARBON MONOXIDE
NITROGEN DIOXIDE
SULFUR DIOXIDE
LEAD
PARTICULATE MATTER LESS THAN TEN MICRONS

H. Flame and photo-ionization detectors should be used to detect volatile organic vapors.
I. Burn site readings should be taken at the edge of the burn pit and approximately 150 feet away.
J. Scattered locations should be established and checked periodically.
K. Wind direction, temperature, and any other pertinent meteorological information should be recorded.
L. Improper construction and operation impacts air quality.
M. While burning if not allowed, if there are ash piles for any reason these should be tested using the Toxicity Characteristic Leaching Procedure:

* One composite sample from each separate ash pile should be analyzed.
* A minimum of ten samples taken from different strata within the pile is appropriate to develop the composite sample.
* Ash may be placed in a Class I landfill if contamination is not found.
* If unacceptable levels of contamination are detected, the material should be further evaluated and placed in a hazardous material landfill.

N. Soils should be tested for the presence of volatile hydrocarbon contamination. Samples should be taken immediately below the surface:

* Testing should be done by the contractor if it is determined they dumped hazardous materials, such as oil or diesel fuel spills on the site.
* This phase of the testing should be done after the stockpiles are removed from the site.
* Inspect the entire burn site for any areas of discoloration, odor, or obvious problems. Such areas should be identified and restored.

O. Groundwater should be tested on selected sites to determine the probable effects of rainfall leaching through either the ash areas or the stockpile areas.

* Runoff from the grinding sites and other stockpiled debris within storage areas has the potential to contaminate the aquifer.
* Wells should be placed around the perimeter of the grinding sites and at places of possible contamination within sites to determine if there is any type of contamination.
* Testing should occur at selected sites after all debris is removed and results should be compared to generally accepted water quality standards.

P. Grinding sites will post signage of flying debris from grinding operation.

9 - **Site Close-Out Procedures**

A. Resolve variations between local, State, and Federal Government Environmental Regulations and their interpretations prior to site closure.
B. Failure to collect baseline data can result in claims for damage to nonexistent structures or the land itself.
C. Video recordings and/or photographs should be taken prior to opening a site.
D. Background soil/water samples should also be taken before site activities begin to compare with close-out soil and water samples.
E. Groundwater testing is not necessary at non-burn sites unless household hazardous waste is also present at the site and remained for an extended period of time prior to final disposal.
F. Ensure that the contractors are required to remove all residual debris from temporary sites to approved landfills prior to closure.
G. Reference appropriate and applicable environmental regulations.
H. Prioritize site closures.
I. Schedule close-out activities.
J. Develop cost estimates.
K. Develop decision criteria for certifying satisfactory closure based on limited baseline Information.

L. Develop administrative procedures and contractual arrangements for closure phase.
M. Inform local and State environmental agencies regarding acceptability of program and established requirements.
N. Designate approving authority to review and evaluate contractor closure activities and progress.
O. Retain staff during the closure phase to develop site specific remediation actions.

10 - **Temporary Site Closure Checklist**

The following is a recommended temporary site closure checklist. Narrative responses may be required along with other closure documents.

- SITE NUMBER AND LOCATION
- DATE CLOSURE COMPLETE
- HOUSEHOLD HAZARDOUS AND TOXIC WASTE (HTW) REMOVED
- CONTRACTOR EQUIPMENT AND TEMPORARY STRUCTURES
- CONTRACTOR PETROLEUM AND HOUSEHOLD HTW SPILLS
- ASH PILES REMOVED IF ANY ARE FOUND
- COMPARE BASELINE INFORMATION OF THE TEMPORARY SITE TO CONDITIONS AFTER THE CONTRACTOR VACATES THE SITE